

Docket No. MSU 4.1-560
Appl. No. 09/924,841
Amdt. Dated: February 23, 2005
Reply to Office Action of Dec. 16, 2004

This listing of claims will replace all prior versions
and listings of claims in the application:

LISTING OF CLAIMS

Claim 1 - Cancelled

-2- (Currently amended)

A modified Aspergillus nidulans organism for
producing penicillin, comprising a mutation in a
polynucleotide gene encoding an isopenicillin N
synthetase (IPNS) ~~activity~~ wherein the mutation produces
5 the IPNS like SEQ ID NO:1 that has a 212Glu to 212Arg
mutation ~~an amino acid residue~~ at a position two amino
acid residues upstream of a histidine residue at His214
which is an iron ligand of the IPNS wherein the mutation
renders the IPNS dependent on bicarbonate as an activator
10 to produce the penicillin.

-3- (Currently Amended)

The modified organism of Claim 2 wherein the
IPNS ~~activity~~ comprises the amino acid sequence ~~selected~~
~~from the group consisting of~~ SEQ ID NO:1, ~~SEQ ID NO:2,~~
~~SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ~~
5 ~~ID NO:7, SEQ ID NO:8, SEQ ID NO:9, and SEQ ID NO:10.~~

Claims 4 - 10 Cancelled

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-11- (Currently amended)

An isolated DNA encoding an isopenicillin N synthetase (IPNS) ~~activity~~ wherein the isolated DNA comprises an IPNS like SEQ ID NO:1 with a codon 212Glu that has been modified to encode ~~an amino acid~~ 212Arg and
5 which is two codons upstream from the codon 214His Arg that encodes a histidine residue which is an iron ligand of the IPNS wherein the 212Arg ~~amino acid~~ renders the IPNS dependent on bicarbonate as an activator of the IPNS.

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-12- (Currently amended)

The isolated DNA of Claim 11 wherein the
IPNS ~~activity~~ comprises the amino acid sequence ~~selected~~
~~from the group consisting of SEQ ID NO:1, SEQ ID NO:2,~~
~~SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ~~
5 ~~ID NO:7, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:10.~~

Claims 13 - 16 Cancelled

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-17- (Currently Amended)

The isolated DNA of any one of Claims 10, 11,
13 or 15 wherein the isolated DNA is from Aspergillus
nidulans ~~an organism that belongs to a genus selected~~
~~from the group comprising Actinomycetes, Aspergillus,~~
5 ~~Bacillus, Cephalosporium, Cercospora, Escherichia,~~
~~Eubacteria, Micromonospora, Nocardia, Penicillium,~~
~~Pseudomonas, Streptomyces, and filamentous fungi.~~

Claim 18 - 50 Cancelled